$k = C_p/C_v = 7/5$ $\gamma = \frac{n-1}{n}$

$KA = (C_p - C_v)/C_p = R/C_p = 2/7$ $n = 1/(1-\gamma)$

APPENDIX VIII

Nonflow Reversible Processes for a Perfect Gas

Type of Process	Polytropic	Isobaric	Isochoric	Isothermal	Adiabatic
$n =$	$0 - \infty$	0	∞	1	k
$P_2 =$	$P_1\left[\frac{V_1}{V_2}\right]^n$ or $P_1\left[\frac{T_2}{T_1}\right]^{n/(n-1)}$ $= \frac{1}{\gamma}$	P_1	$P_1\left[\frac{T_2}{T_1}\right]$	$P_1\left[\frac{V_1}{V_2}\right]$	$P_1\left[\frac{V_1}{V_2}\right]^k$ or $P_1\left[\frac{T_2}{T_1}\right]^{k/(k-1)}$ $= \frac{1}{KA} \approx 3.5$
$V_2 =$	$V_1\left[\frac{P_1}{P_2}\right]^{1/n}$ or $V_1\left[\frac{T_1}{T_2}\right]^{1/(n-1)}$	$V_1\left[\frac{T_2}{T_1}\right]$	V_1	$V_1\left[\frac{P_1}{P_2}\right]$	$V_1\left[\frac{P_1}{P_2}\right]^{1/k}$ or $V_1\left[\frac{T_1}{T_2}\right]^{1/(k-1)}$
$T_2 =$	$T_1\left[\frac{V_1}{V_2}\right]^{n-1}$ or $T_1\left[\frac{P_2}{P_1}\right]^{(n-1)/n}$ $= \gamma$	$T_1\left[\frac{V_2}{V_1}\right]$	$T_1\left[\frac{P_2}{P_1}\right]$	T_1	$T_1\left[\frac{V_1}{V_2}\right]^{k-1}$ or $T_1\left[\frac{P_2}{P_1}\right]^{(k-1)/k}$ $= KA = 2/7$
$S_2 - S_1 =$	$mc_n \ln T_2/T_1$	$mc_p \ln T_2/T_1$	$mc_v \ln T_2/T_1$	$\frac{mR}{778} \ln\left[\frac{V_2}{V_1}\right]$	0
$Q =$ (Btu)	$mc_n(T_2 - T_1)$	$mc_p(T_2 - T_1)$	$mc_v(T_2 - T_1)$	$\frac{PV}{778} \ln\left[\frac{V_2}{V_1}\right]$	0
Wk = (ft lb)	$\frac{P_1V_1 - P_2V_2}{n - 1}$	$P(V_2 - V_1)$	0	$PV \ln\left[\frac{V_2}{V_1}\right]$	$\frac{P_1V_1 - P_2V_2}{k - 1}$
$U_2 - U_1 =$ (Btu)	$mc_v(T_2 - T_1)$ or $\frac{P_1V_1 - P_2V_2}{778(1 - k)}$	$mc_v(T_2 - T_1)$ or $\frac{P_1V_1 - P_2V_2}{778(1 - k)}$	$mc_v(T_2 - T_1)$ or $\frac{P_1V_1 - P_2V_2}{778(1 - k)}$	0	$mc_v(T_2 - T_1)$ or $\frac{P_1V_1 - P_2V_2}{778(1 - k)}$
γ	$0 - \infty$	∞	1	0	$\frac{R}{C_p} = \frac{2}{7}$
W_{FLOW}	$Q - \Delta h$	0	N/A	$Q - \Delta h$	$-\Delta h$
C_N	$\frac{C_v(n-k)}{n-1}$ OR $C_p\frac{(\gamma - KA)}{\gamma}$	C_p	C_v	N/A	0